BIOLOGICAL CONTROL OF HEMLOCK WOOLLY ADELGID

Control of hemlock woolly adelgid (HWA) through the use of insecticides is limited to individual tree treatments in accessible and non-environmentally sensitive areas. There are no practical means available to manage HWA infestations in hemlock forests. Long-term management of HWA in eastern hemlock forests will likely come about by the introduction and establishment of several natural enemies. Native natural enemies alone cannot maintain HWA populations below damaging thresholds.

In 1993, the USDA Forest Service, Forest Health Protection program established a HWA Working Group involving Forest Service Research, State forestry and agriculture agencies, the National Park Service, and several universities. The HWA Working Group facilitates information sharing and coordination among research and resource managers looking for management solutions. A strategic plan evolved, and the search for a biological control became a major focus of the HWA Working Group. At present, several adelgid predator beetles are at various stages of development. It is expected these natural enemies will play a major role in providing long term control and reducing the impacts of HWA.

Pseudoscymnus tsugae

One of the most promising predators currently being evaluated and established throughout the range of HWA is a tiny but voracious ladybird beetle *Pseudoscymnus tsugae*. Native to Japan, this beetle has proven to be an effective predator of HWA on individual trees and is highly selective and synchronized with its prey.

Since 1998, nearly 1 million *P. tsugae* beetles have been released on state, federal and private lands in 15 eastern states. Beetles are currently being reared at the Connecticut Agricultural Experiment Station, New Jersey Department of Agriculture Phillip Alampi Beneficial Insect Laboratory, North Carolina Department of Agriculture, Clemson University and EcoScientific Solutions LLC in Pennsylvania. Field releases of *P. tsugae* will continue in 2004.

Several species of predaceous beetles from China have been investigated including *Scymnus sinuanodulus*. These ladybird beetles are highly specific to feeding on adelgids and are excellent candidates for release and establishment. Field evaluations are planned for 2004 and rearing methodologies are currently being developed.

Scymnus sinuanodulus

Laricobius nigrinus

In British Columbia, a derodontid beetle, *Laricobius nigrinus* was discovered to be an effective predator on HWA. This highly specialized predator is currently being evaluated at the Virginia Polytechnic Institute and State University. Lab and field studies have shown promising results and the first field release occurred in VA in 2003. Mass rearing methodologies are being investigated and limited multi-state field releases are planned for 2004.

USDA Forest Service
Northeastern Area, State and Private Forestry
Forest Health Protection
180 Canfield Street
Morgantown, WV 26505
304-285-1546

10/22/2024